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primarily upon physiognomy, and only secondarily upon environment or floristic composition. It is doubtful whether such a method can ever give entirely satisfactory results, although the author considers it the best for this region, where all the associations show the effect of cultural changes. Probably the gravest defect of the paper is the entire failure of the author to discuss the dynamics of the vegetation. The development of the various associations and their successional relations are omitted completely. Illustrations would have added greatly to the clearness of the descriptions, and the scale of the accompanying map would have easily permitted the location of the chief types of vegetation. Almost half of the lengthy article is occupied by a carefully annotated list of species.—H. A. GLEASON.

**Gametophytes and embryo of *Pseudolarix*.**—MIYAKE and YASUT<sup>23</sup> have investigated the monotypic *Pseudolarix* (*P. Kaempferi*), a native of China, one of the Abietineae whose morphology had not been studied. The material was obtained from a tree growing in a garden in Pallanza, Italy. The winged pollen grains contained the usual cells of the male gametophyte, and the divisions showed 12 chromosomes, but the later development of the gametophyte was not seen. Megaspore formation was observed, a linear tetrad being formed about the time of pollination (April in Italy). The large central vacuole is formed in the spore stage (before free nuclear division), and the young female gametophyte is invested by several layers of nutritive cells. At maturity, the megaspore membrane is well developed, as in other Abietineae. Early in June the female gametophyte is solid tissue, and then the 5 or 6 archegonium initials appear, the archegonia maturing in about three weeks. After the division of the central cell, the ventral canal cell disorganizes at once. Fertilization occurs about the end of June, and the first four free nuclei of the proembryo move to the base of the egg, walls appearing with the next division. The cells of each tier divide, and the completed proembryo consists of four tiers, with four cells in each tier. The functions of the tiers are as in *Pinus*, and the whole situation seems to be an almost exact duplication of that genus.—J. M. C.

**A cedar bog in Ohio.**—DACHNOWSKI<sup>24</sup> records, as an isolated area of northern plants, left behind in the great northward migrations following upon the retreat of the ice sheet of the glacial period, a swamp in central Ohio, characterized by *Thuja occidentalis* and other species not usually found south of central Michigan. Mats of sphagnum, together with the sundew and various orchids, testify to the true bog character of the association.—GEO. D. FULLER.

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<sup>23</sup> MIKAYI, KÜCHI, and YASUI, KONO, On the gametophytes and embryo of *Pseudolarix*. Ann. Botany 25:639-647. pl. 48. 1911.

<sup>24</sup> DACHNOWSKI, ALFRED, A cedar bog in central Ohio. Ohio Naturalist 11:193-199. 1911.